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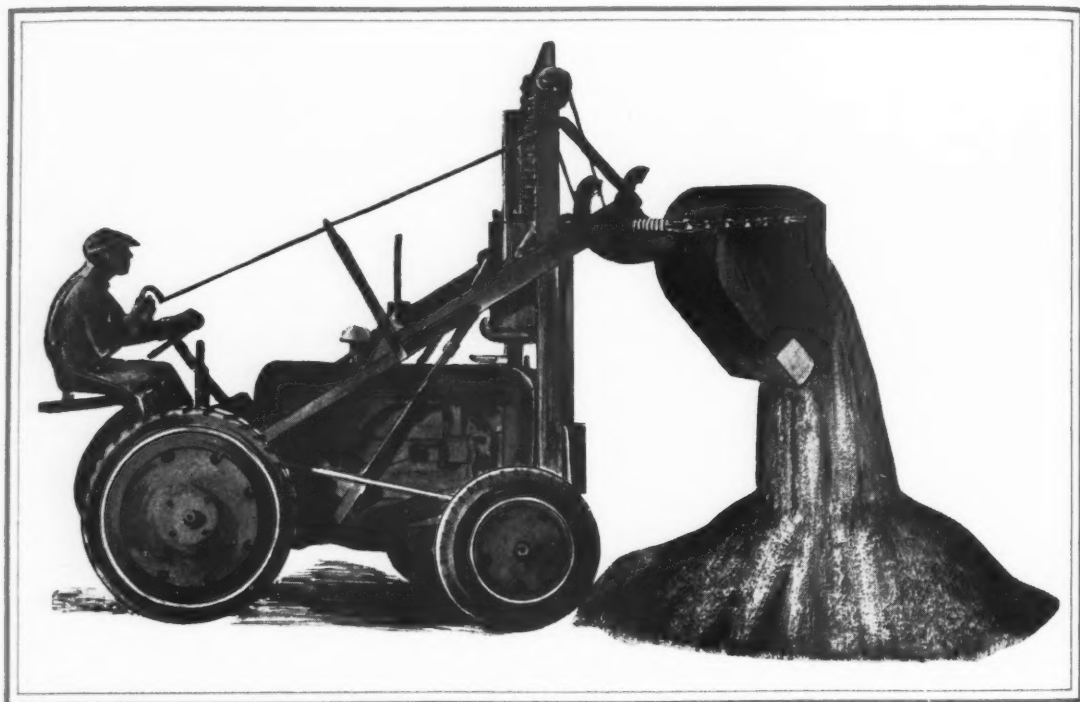
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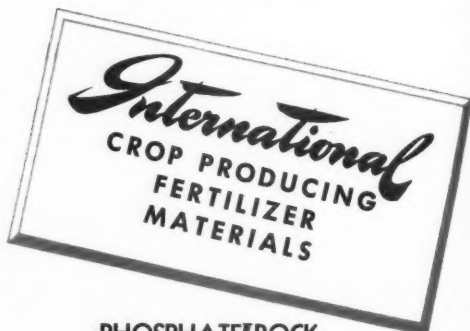
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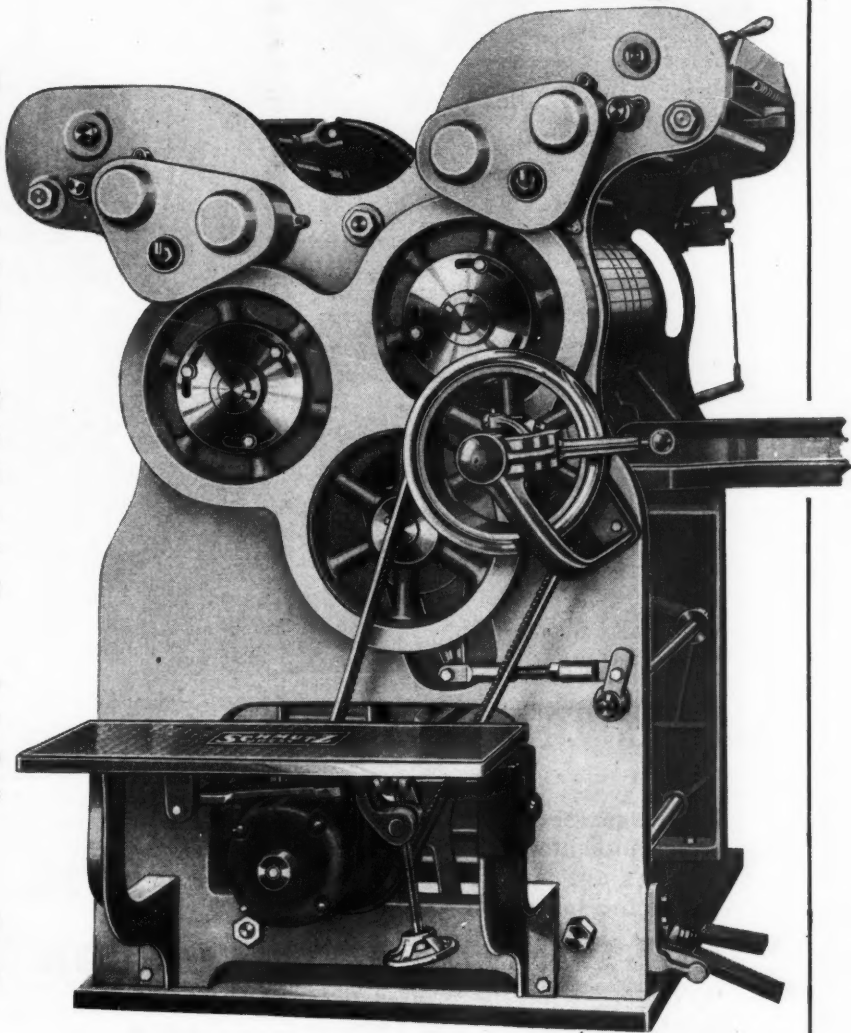
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Labeling for Minor Plant Foods

By J. J. TAYLOR

State Chemist, Tallahassee, Florida

Not all of the States at this time have included in their fertilizer laws any requirements for the labeling or analyzing of secondary plant foods, whichever they may be called. Where the subject has already been dealt with legislatively, labeling provisions are usually provided which, of course, must be followed by the regulatory official. Where no such provisions are made by law, either the Agricultural Board or the Commissioner of Agriculture would usually have the power to make regulations as to labeling requirements.

There is some confusion in the terms "secondary plant foods" and "minor plant foods" or "minor elements" which we would like to discuss briefly to clarify some points. In some localities all plant foods other than nitrogen, phosphorus and potash are classed as secondary plant foods. In other localities the term "secondary plant foods" has a more restrictive meaning, applying only to calcium, magnesium and sulphur, and in some cases boron, while the term "minor plant foods" is applied to copper, manganese, zinc, iron and aluminum, with boron sometimes included in this group.

The Florida Commercial Fertilizer Law defines secondary plant food as meaning "any element or substance useful as plant food other than the primary plant foods herein-

above defined." It then defines primary plant foods as "consisting of nitrogen, phosphoric acid and potash or any combination of these substances." It makes no mention of minor plant foods; therefore, all elements of plant food other than NPK are considered secondary plant foods under our Fertilizer Law.

With regard to labeling, our law has this to say: "If claim is made for any of the secondary plant foods, they shall be guaranteed on the tag in percentage expressed as oxides. Where such elements form more than one oxide, the Commissioner of Agriculture shall designate the particular oxide which shall be used in the guaranteed analysis. If any claims of solubility of secondary plant foods are made, such claims shall be guaranteed on the tag in percentage expressed as the oxides."

The Commissioner of Agriculture, by regulation, has prescribed the form of tag to be used on secondary plant foods, both materials and mixtures. The name of the material, if it is a material, and the brand name, if it is a mixture; the name and address of the manufacturer; the net weight; and the guaranteed analysis. Under the guaranteed analysis, the name of the actual material is given with its equivalent expressed in terms of its oxide. For example, manganese sulphate—equivalent to manganese oxide, not less than — per cent; or zinc sulphate—equivalent to zinc oxide, not less than — per cent, etc.

*A paper presented at the Annual Meeting of the Association of American Fertilizer Control Officials, Washington, D. C., October 21, 1947.

Calcium, Chlorine and Sodium

There are some elements which, it seems to me, might be classed as secondary plant foods or minor elements, notably calcium and chlorine, which, under our law, are not treated in the same category as other secondary plant foods. This is undoubtedly due to the fact that calcium and chlorine had been given special recognition in fertilizer laws and labeling regulations long before the question of secondary plant foods arose, and the form of labeling and guaranteeing these elements were already well established and were understood by both growers and manufacturers, so that they were left undisturbed.

Our fertilizer law, for instance, requires ground limestone to be labeled to show calcium carbonate, not less than — per cent, whereas it requires other secondary plant food guarantees to be expressed as the oxide. It also requires a screen test of ground limestone but not of other secondaries.

The only guarantee required of the element chlorine is a maximum guarantee, that is, chlorine, not more than — per cent. A penalty is assessed against the manufacturer if this guarantee is exceeded, the same as in the case of other guarantees that are deficient. This despite the fact that chlorine is relatively harmless to most crops, in reasonable amounts, and is as beneficial to others as many of the other so-called minor plant foods. This situation was brought about, no doubt, by the early knowledge that excessive chlorine adversely affected the quality of the tobacco crop.

It is now recognized by some agronomists that sodium applied as sodium chloride increases the yield in some crops. Undoubtedly considerable work will have to be done to bring about anything approximating uniformity of labeling, tagging and guaranteeing of secondary plant foods.

Use of Minor Elements Increasing

It may be of some interest to this organization to know how the use of secondary plant foods has increased in our State during the past decade. Nineteen hundred and thirty-six was the first year we began analyzing fertilizers for secondary plant foods. In 1946, 2,258 samples out of a total of 3,739, or approximately 60 per cent, contained secondary plant foods. This means that three out of five samples we analyzed in 1946 contained from one to five elements of secondary plant food for which we had to test, in addition to our regular analysis for NPK. The following is a list of secondary plant foods registered in the State in 1946-47:

<i>Companies</i>	<i>Secondary Plant Foods</i>
4	Aluminum Sulphate, 16 to 20 per cent Al_2O_3
3	Borax, 30 to 36 per cent B_2O_3
9	Calcined Magnesite, 65 to 93 per cent MgO.
17	Copper sulphate-Bluestone, 25 to 31.50 per cent CuO.
9	Sulphate of Iron (Copperas), 26 to 30 per cent Fe_2O_3 .
9	Magnesium Oxide (Seawater), 70 to 95 per cent MgO.
1	Magnesium Sulphate, 30 per cent MgO.
24	Manganese Sulphate, 29.7 to 35.2 per cent MnO.
2	Sulphur, 95 to 99 per cent S.
14	Zinc Sulphate, 30 to 45 per cent ZnO.

The importance and interest in the subject of secondary plant foods is growing so rapidly that they are receiving far more attention than nitrogen, phosphoric acid and potash, which have been called the primary plant foods. In fact, some of the foremost agronomists in Florida are beginning to deplore the use of the terms "primary" and "secondary" plant foods, and "major" and "minor" elements, and I think we are eventually going to have to give some serious consideration to complete reclassification of plant foods, possibly eliminating the terms "primary and secondary plant foods," and "major and minor elements" and simply classifying all of them as plant foods.

Camp Urges Listing of All Elements

Dr. A. F. Camp, Vice-Director in charge of the Citrus Experiment Station at Lake Alfred, Florida, in response to a request for his opinion in this matter, expressed himself as follows: "In the first place, I would like to see the so-called minor elements listed just as nitrogen, phosphorus and potassium are listed. In other words, instead of 4-6-8, or something else, there should be a listing of 4-6-8-3-1-1/2, or what have you, and the order in which they are to be listed established by law. We have been using the following listing: nitrogen, phosphorus, potassium, magnesium, manganese, copper, zinc and boron. From all our experimental work here, I see no more justification, say, phosphate a major element than there would be for calling magnesium a major element. I think this division into major and minor elements is

(Continued on page 30)

The Transportation and Safe Handling of Ammonium Nitrate

**Interagency Committee Report Makes Recommendations for Land Transport and Storage.
Material Not Classified as an Explosive**

In a report on the land transportation of ammonium nitrate, fertilizer grade, the interagency committee appointed by the U. S. Coast Guard to study the problem has classified this material as an "oxidizing material" rather than as a "high explosive." Noting that, up to June 30, 1947, 1,440,000 tons of ammonium nitrate had been produced in U. S. plants and 660,000 tons imported from Canada, the committee states that "experience in the transportation of ammonium nitrate fertilizer by land, including at least 11 fires involving carlot quantities, and other experiences with storage in warehouses, indicates that the amounts involved, or the type of vehicle or warehouse did not contribute to confinement of products of decomposition or the building up of pressure and temperature to the degree necessary to cause an explosion. While these experiences suggest that in normal land transportation and storage the explosive hazard is negligible, this report is aimed at measures relating to such transportation and storage that will contribute the widest practicable margin of safety under all circumstances."

The report was signed by representatives of the Army, Navy, Coast Guard, Department of Agriculture, Bureau of Mines, National Bureau of Standards, U. S. Maritime Commission, Interstate Commerce Commission, and the Association of American Railroads.

Recommendations Affecting Land Transportation

The Committee recommends that such of the following as can be legally incorporated in regulations be so treated and that the others be publicized in the widest possible manner as recommendations.

(a) It is recommended that the Interstate Commerce Commission be requested to promulgate a regulation to require that the paper bags used for shipments of ammonium nitrate fertilizer be made to a specification.

(b) It is recommended that as soon as practicable production processes and loading procedures be so arranged as to permit the loading of ammonium nitrate fertilizer in

multiwall paper bag containers at temperatures not in excess of 140° F.

(c) It is recommended that each car to be loaded with ammonium nitrate fertilizer shall before the commencement of loading be cleanly swept of all prior lading. Cars showing a residue of sulphur from prior lading shall be washed clean and dried before being used to transport ammonium nitrate fertilizer.

(d) It is recommended that in the loading and unloading of ammonium nitrate fertilizer due care be exercised to prevent damage to the bags. Any spilled fertilizer should be promptly and thoroughly cleaned up and should be disposed of by burying in the ground or dumping in water. A broken or cracked bag containing uncontaminated fertilizer may be salvaged by placing inside a clean new paper bag (preferably oversized) and closing securely.

Storage in Commercial Warehouses

The Committee believes the following suggestions should be given the widest possible circulation among persons interested in the commercial storage of ammonium nitrate fertilizer.

(a) The warehouse should be of such construction as to afford good ventilation, and it is considered to be especially desirable if it can be quickly vented in case of fire. Concrete or masonry warehouses are not regarded as desirable for the storage of this material unless they are well and adequately ventilated as otherwise they would tend to confine the products of combustion in the event of fire.

(b) Ammonium nitrate fertilizer should not be stored in a warehouse in which explosives are stored.

(c) Before storing ammonium nitrate fertilizer the portion of the warehouse to be used should be thoroughly cleaned of all rubbish, or contaminating substances.

(d) Ammonium nitrate fertilizer should be stored away from all organic materials or other contaminating substances.

(e) Ammonium nitrate fertilizer should be stored away from electric wiring, steam pipes,

radiators or any heating mechanism.

(f) Before starting to store ammonium nitrate fertilizer clean wood dunnage should be laid on the floor of the warehouse. The containers of the ammonium nitrate fertilizer should not be stored within three feet of the walls of the warehouse, and should not be tiered more than six feet in height without flooring off and providing ventilation areas at least three inches in depth. In no event should tiering exceed 12 feet in height nor should the top tier of containers be closer than 12 inches to the eaves of the roof or the overhead floor or spreader beams. The length and width of the pile should not exceed 12 feet without an aisle space of at least three feet intervening.

(g) Any spilled fertilizer should be promptly and thoroughly cleaned up and should be disposed of by burying in the ground or dumping in water. A broken or cracked bag containing uncontaminated fertilizer may be salvaged by placing inside a clean new paper bag (preferably oversized) and closing securely.

(h) Wooden floors impregnated with ammonium nitrate fertilizer will be very free burning if a source of ignition should contact them. For this reason if any spilled ammonium nitrate fertilizer should remain in contact with such a floor for any length of time the floor should be thoroughly flushed and scrubbed with water to insure that the dissolving of all the fertilizer has been accomplished.

(i) Prohibit smoking in or adjacent to the warehouse.

(j) Prohibit open lights or flame within the warehouse.

Procedure in Case of Fire

In the event of fire the following procedures are suggested:

(1) Notify the local fire department immediately.

(2) Apply water immediately and in as much volume as possible, preferably by using fire hose of 1½ to 2½ inches diameter. Bring as many hose lines to bear as the capacity and pressure of the water supply system will permit.

(3) Salt or fresh water may be used with equal efficiency.

(4) Do not hesitate to apply water directly to the containers of the ammonium nitrate fertilizer as instantaneous cooling is the desired objective. Bags broken open by the force of a water stream will not add any degree of hazard. The only adverse effect water will have on the ammonium nitrate fertilizer will

be to partially dissolve it and increase the clean-up operations. No considerations of salvage should influence immediate and effective application of water. Extinguish the fire first and only then consider salvage.

(5) Water deluge systems have been effective in extinguishing fires in this type material. The effectiveness of water sprinkler or spray systems or water fog on fires involving ammonium nitrate fertilizer is doubtful. The use of inert gas or foam is not recommended. Hand extinguishers are considered useless in this type of fire.

(6) Since ammonium nitrate is an oxidizing material capable of supplying oxygen sufficient to maintain combustion, efforts to smother the fire with steam will be useless and dangerous, as the use of steam would increase the temperature of the mass and thus increase the hazard.

(7) Irrespective of the normal reaction of ventilation increasing the severity of a fire, it is recommended that barriers such as doors and windows of warehouses be opened to provide as much ventilation as possible. Dissipation of gases of decomposition will reduce the possibility of pressure being built up and enhance the effectiveness of fire-fighting operations. Remember, high temperature and pressure are factors to be avoided. At temperatures less than 200° F. it is not likely that the chemical stability of ammonium nitrate fertilizer will be affected.

(8) Oxygen-breathing apparatus or hose connected fresh-air breathing apparatus of types approved by the United States Bureau of Mines should be used to protect personnel against gases. Oxides of nitrogen and carbon monoxide are the most dangerous of the gases likely to be encountered in such a fire.

(9) If sufficient heat is present it may happen that during the application of water, formation of steam in pockets in the piles of nitrate may cause eruptions with force comparable to minor explosions. For this reason it is judicious not to approach too close to the fire and not to become too alarmed at such steam eruptions. The fire fighter should protect himself by guiding his steam from behind the shelter of the wall of the warehouse, at the corner of doorways, or immediately below the sash of the windows or from behind any substantial barrier. The foregoing is not to be interpreted to supersede "on the spot judgment." The quicker the temperature is lowered the less likelihood there will be of steam eruptions and the generation of oxides of nitrogen. Rapid reduction of temperature is the essence of the entire control.

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The Fertilizer Inspector and His Equipment

By B. D. CLOANINGER

Department of Fertilizer Inspection and Analysis, Clemson, S. C.

IT HAS been said "A corporation may spread itself over the entire world and may employ a hundred men but the average person will usually form his opinion of it through his contact with one individual. If this person is rude or inefficient, it will take a lot of kindness and efficiency to overcome that bad impression."

This statement is most applicable to the inspector, who is the department's representative and, in a number of instances, will be the only representative the farmer or dealer will see during the year.

Realizing the word "inspector" spells something, I am going to spell it and assign a suitable word for each letter.

I—Intelligent. To capably represent the department and the State, the inspector must not only be fully versed on his job but on the other activities of the department. A great degree of intelligence is often shown by answering only the questions pertaining to his work and being reserved or shut-mouthed about controversial ones: the latter, often are misinterpreted and bring embarrassment to the department.

N—Neat. Neatness not only adds prestige, but adds pride and accuracy in securing samples. True; it is hard for one to look immaculate at all times but a fresh shave and clean shirt each morning will mean lots toward achieving neatness. Even though it may be impossible to secure the latest model car, the old one can be kept neat and presentable.

S—Service. The importance of instilling in the inspector the desire to render a service to the agricultural public cannot be over-emphasized. During his tour as inspector there will be hundreds of questions he will not be able to answer, but merely by repeating the question on his daily report it can be referred to the proper authority. This procedure in one state I am familiar with, has resulted in the placement of purebred animals, seed and

bulletins. Even though a farmer may know who to write, he will not for the simple reason he can find excuses for putting it off. Service without the letter "I" does not spell anything.

P—Physically Fit. To hire an inspector physically unfit is *not* fair to the department, the man, nor other inspectors. Moving in and out of warehouses, sampling, weighing and inspecting fertilizers requires energy and plenty of it. The physically unfit would probably get a negro to help and eventually let him draw the sample. In the event of a deficiency, you can easily imagine the prestige established for the department. We all know, that at times, pressure is applied to hire an elderly, physically unfit man as an inspector. For an efficient department these applications should be referred to the museum, historical or some other section.

E—Energetic. Regardless of the numerous desirable characteristics, an inspector not energetic enough to get out and "shake the bushes" to secure samples and check for irregularities, will be unsuccessful in his accomplishments. The better farmers and users of fertilizers are not always located on the hard surface roads. The farmers in the back woods are often more appreciative of the services, too, as they are visited less often by agricultural workers.

C—Careful. A number of important phases are necessary in control work but one of the most important is the drawing of an accurate sample. The best chemist in the world is lost if he has a bad sample. Not only is his time lost along with valuable chemicals, but also the department's reputation. Several rods full from a different grade will, of course, give undesired results.

T—Tactful. Even though specifically charged with the duty of enforcing the state fertilizer law, one must be tactful at all times. Once the farmer or dealer realizes that department action is for his protection, no trouble is encountered. Even under most difficult conditions a well rounded inspector should handle any situation tactfully. In most instances he lives in the town or com-

*A paper presented at the Annual Meeting of the Association of American Fertilizer Control Officials, Washington, D. C., October 21, 1946.

munity and must be tactful in order to maintain his personal prestige and standing.

O—Observant. To efficiently enforce the fertilizer laws, it is essential that the inspector be a close observer. By detecting and reporting small irregularities the manufacturers are kept on their toes and often flagrant violations are prevented. A close observer will eliminate unnecessary mileage by working the section as fertilizer moves to them. Oftentimes, undesirable reports and rumors concerning one of the State's departments can be squelched, if reported in time—this the inspector can do if he is a close observer.

R—Respect and Be Respected. An inspector must at all times respect the rights of others; this, in turn, will cause others to respect him. Most fertilizer laws give the department ample power to cope with any situation—this authority should be used as the last resort. The laws, of course, must be strictly enforced at all times but in so doing the dealers' farmers' and manufacturers' rights must be respected. To maintain respect, the inspector and the department must treat all alike. Thus the qualifications of an inspector are summarized as follows: intelligent, neat, service-rendering desire, physically fit, energetic, carefully, tactful, observant and respectful.

What Can the Department Do

1. Hold a 2- to 3-day inspectors' school each year. In addition to giving them the latest instruction and changes in the fertilizer law, various agricultural specialists should appear on the program.

2. Have someone from the department office or one directly in charge of the inspection work visit him frequently. In addition to consoling and assisting in the solving of his various problems, he realizes he has not been forgotten.

3. Keep the inspector fully informed at all times by sending him a blind copy of all correspondence pertaining to deficiencies and irregularities in his district so he is kept abreast of all developments. The furnishing of a loose leaf notebook to each inspector and the punching of holes in all letters going to the inspector is recommended. This enables him to keep an Up-to-date file in his car at all times.

4. Weekly circular letters to inspectors giving high lights of the department activities and interest is a further step in keeping them abreast of all developments.

5. Assign each inspector a letter in the alphabet, and number his transcripts with

a numbering machine, up to the maximum number you think he will secure during the season. This causes him to write the number only once, and that is on the outside of the sample container, thus eliminating a possible error.

6. *Emphasize* and re-emphasize the fact he is your direct representative and that you are depending on him—he should not only render a service but spread good will.

7. We all like to feel important at times, so why not send him a special delivery letter, or telegram, or even call him over long distance, when the acuteness of the situation demands.

Equipment

1. Up-to-date, well-kept equipment not only adds prestige to the inspector and the work but causes him to be more accurate. Frequent painting and proper care of equipment cannot be over-emphasized.

2. True, inspectors are not considered highly technical men but it is surprising the favorable impression made on a farmer or dealer by displaying technique in securing and quartering the sample.

In addition to the inner-core type sampling rod, the following equipment for the inspector has been found highly satisfactory in South Carolina:

1. A suitcase-like sample case, painted and stenciled with the name of the department on the outside, containing the following: six individual compartments for quart containers; two pieces of top covering or heavy oil cloth ($\frac{1}{2}$ yard of each) for mixing and dividing the sample; one stapling machine for attaching a source tag to the transcript book. You will note this arrangement permits the inspector to carry all his own equipment, which certainly has its advantages. Frequently it is necessary for the inspector to walk or even take a boat to reach the fertilizer warehouse. Running back and forth to a car to get a piece of equipment causes one to believe the inspector is not organized or capable.

3. The 500-lb. platform scales with reduced beams and the Army-Navy folding scales with modified platform extension have proven very satisfactory in checking weights on farms and in dealers' warehouses. It is recommended that four 50-lb. check weights accompany the scales and they be balanced each time they are moved. When checking weights on farms, the farmer is usually agreeable to furnishing the necessary help. Last season 6,898 underweight bags averaging 4.1 lbs short per bag were found in dealers'

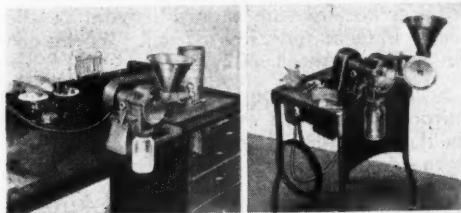
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New Laboratory Pulverizer by Pulverizing Machinery Co.

A new specially designed popular-priced mill for laboratory use in the grinding of analytical samples, has been announced by Pulverizing Machinery Company, 326 Chatham Road, Summit, N. J., manufacturers of pulverizers and dust collector systems.

Known as the Mikro-Samplmill, the new unit was developed in collaboration with representatives of the Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture. This has led to a unit which meets all the requirements for analytical use in industrial as well as governmental laboratories and other research centers.

The Mikro-Samplmill is furnished in two models, one for bench use and a floor model. The former is for mounting on a laboratory bench. The latter, with legs and ball bearing casters, can be moved about for handy use in any part of laboratory or plant. Both have extension cord for plugging into a 110-volt line.



Bench Model

Floor Model

The Mikro-Samplmill was designed primarily for pulverizing analytical samples of fertilizing materials and mixtures up to 7 per cent of free moisture, and mixed feeds and grains. It performs with equal efficiency, however, on roots, limestone, coal and other minerals.

Complete protection against contamination is accomplished by liberal use of stainless steel and by smooth interior surfaces which afford no harboring place for residues that might pollute.

Complete and thorough cleaning between batches is generally a matter of only one or two minutes, depending upon the character of the material ground. This figure the manufacturer states, is an average of many tests on reasonably dry materials. Clean-out door in mill housing enables operator to easily brush residues from under screen into glass discharge jar. Grinding chamber is instantly and completely exposed by simply swinging

back the hinged cover. One-piece rotor, screen and feed screw can be removed, cleaned and replaced with speed and ease, even by an unskilled operator.

Manually operated inclined feed screw assures feeding of complete sample into the grinding chamber. All parts of unit are so easily accessible that with reasonable care in cleaning, loss of material is negligible even in samples as small as 10 gms.

Although feed rate varies with nature of material and fineness of grind, it will approximate one pound per minute—in any case, at sufficient speed to prevent changes in moisture content.

The millbody, hinged cover, feed screw, clean-out door and feed hopper are of bronze. Interior parts such as mill housing liner, screens, and stamped patented one-piece rotor, are all of stainless steel. Complete standardization in design of the unit provides for all stock parts of the Mikro-Samplmill being interchangeable.

Speed of the Mikro-Samplmill is 3,000 r.p.m. Extra pulley is included for 12,000 r.p.m. This higher speed is recommended where finest screen does not produce sufficient fineness of product, as in the case of tough or resistant material.

The Mikro-Samplmill is furnished with screens having .039 in., 1/16 in., and 1/8 in., round perforations. Coarser or finer size screens are available from stock. Hopper is made of bronze, but can be furnished in stainless steel, if desired.

Milk Depletes Soil Fertility

In every ton of milk sent off the farm there are 14 to 18 pounds of mineral matter, mostly lime and phosphate. Like the steady dripping of water on hard stone, daily shipments of milk from any farm will steadily wear away that farm's fertility. . . . The fertilizing constituents in manure come entirely from the feed consumed, for animals do not create any fertility value.

Dairy cows void about 65 per cent of the nitrogen, 50 per cent of the phosphorus, and 70 per cent of the potassium contained in the ration. Consequently the manure from the herd does not supply enough fertilizer for the average dairy farm needs. The fact that every Virginia dairy farmer must buy lime and phosphate in order to grow alfalfa, clover, and grass is ample evidence that purchased grain concentrates do not replace the minerals lost in milk production.—*Virginia Extension Division News.*

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Farm Outlook Good Says Secretary Anderson

Crop production near the wartime peak and livestock production only moderately below that level in combination with prices some 20 per cent above those of the previous year gave the farmers of the United States unexampled prosperity in 1947, says Secretary of Agriculture, Clinton P. Anderson, in his annual report released on January 19th. Under ordinary peace-time conditions, the report says, the agricultural situation that prevailed during the year would have been as favorable as any on record. Cash receipts from farm marketings, the highest on record, amounted to nearly 30 billion dollars. Farmers' assets in land, buildings, livestock, equipment, and savings were at the highest level on record; and the equity of farm operators in the agricultural plant or the value of assets not offset by debts was up 113 per cent from 1940. Farm debt, though slightly greater than in 1946, was relatively low. Nevertheless, the farmers, Secretary Anderson declares, could not take a wholly optimistic view of their position because the export demand of the years immediately ahead will depend so largely upon American financing.

Secretary Anderson says that because agriculture abroad will eventually recover from the damage inflicted on it by the war, farmers in this country need assurance, not yet available, of permanently high domestic employment along with a large commercially financed export trade. According to Secretary Anderson, agriculture can have these necessities only through a national economic policy that will maintain abundance in every phase of our economic life. He says farmers do not worry overmuch about minor fluctuations in business activity, but fear the possibility of a depression such as followed World War I. Without making any forecast, he emphasizes a difference between the national response we made then to the world situation and the response we are making now. "I believe," says the Secretary, "that if we continue in our present course, which keeps us in rather than takes us out of the world economy, we shall find it easier to avoid a major depression and consequently to avoid agricultural programs of the type we found essential in the 1930's."

Especially favorable for agriculture, according to Secretary Anderson, is the government's effort to revive normal world trade, the part it has taken in the establishment of the International Monetary Fund and the International Bank for Reconstruction and

Development, the part it is playing in world-food relief, and the loans and other assistance it is making directly to war-damaged foreign economies. "If we continue to fill our place in the world economy, instead of pulling out of it as we did 30 years ago, the chance of avoiding a major depression will be better." As a practical approach to the problem of enabling other nations to pay for what they obtain from the United States, Secretary Anderson mentions several types of imports which he believes might be expanded without hurting domestic business. Among these are shipping and services to American tourists; products of tropical agriculture; the industrial specialties of foreign countries; and various minerals and metals not produced in sufficient quantity in the United States.

Mann Appointed Vice-President of Potash Institute

Dr. H. B. Mann of Atlanta, formerly Southern manager for the American Potash Institute, has been appointed vice-president of the Institute. Well-known throughout agricultural circles because of his past association with experiment stations and other scientific organizations, Dr. Mann assumed his new duties at the Institute's headquarters in Washington, D. C., on January 1.

House Committee Asks Further Nitrogen Information

Operators of the four former Army ordnance plants leased or sold by the government to private industry in 1946 have been asked by the Fertilizer Subcommittee of the House Committee on Agriculture for a complete report on their operations as part of the committee's investigation of the fertilizer situation.

The committee requested the operators to report the current production of anhydrous ammonia, how this production compares with capacity of the plant, how much of the production is going into manufacture of fertilizer, and how much to other uses.

The committee has also asked the War Department for more information on the details of its proposed leasing of the Cactus ordnance works to private interests in order to determine whether the leasing of the plant will ensure a greater supply of nitrogen being available to agriculture.

The four privately operated plants, subject of the inquiry, are the Jayhawk, leased to

Spencer Chemical Company in April, 1946; Ozark, leased to Lion Oil Company in May, 1946; Lake Charles, leased to Mathieson Alkali Works in September, 1946, and Dixie, sold to Commercial Solvents Corporation in July, 1946.

The committee hopes to submit its report to Congress on the fertilizer situation around February 1st as result of its investigations which began last month

Bemis Sewing Machine Clinics

A bag closing sewing machine is a complicated bit of precision equipment—and there's plenty of "know-how" connected with keeping one of them humming along at top efficiency. A breakdown in one of these machines always means loss of valuable production.

For several years Bemis Bro. Bag Co., which manufactures bag closing threads and twines as well as bags, has had experts traveling about the country giving on-the-spot help and advice in customer plants. This service helped many plant managers and foremen over bad spots, showed them improved operating practices and how best to maintain bag closing machines in tip-top condition. The Bemis experts found they had more than they could handle; that the plant-to-plant calls could not reach everyone who needed help on bag closing sewing machine maintenance.

As an outgrowth of this situation Bemis established its "Sewing Machine Clinic." The clinic, two sewing machine specialists with a specially mounted bag sewing head and other equipment, moves from city to city inviting representatives from plants in that area to attend the demonstrations and discussions. The demonstrations include the complete dismantling and reassembling of a sewing head and instructions on the handling of common problems encountered in sewing machine operation.

The clinics are informally conducted. During question and answer periods the participants have a chance to solve their various individual problems, or to go more deeply into phases of the subject which are of particular interest to them.

The Sewing Machine Clinics are not intended to replace the Bemis experts' personal assistance at factories, but to supplement it. After attending a Bemis clinic, customer plant personnel are usually able to avoid production losses by handling sewing machine difficulties that otherwise would mean calling in outside aid.

Chase Bag Opens Central Art Department

One of the features of the recently completed Chase Bag Company factory in St. Louis is the "Central Art Department," a spacious and modern art studio, completely staffed and having modern equipment throughout.

In years past, when bag users were satisfied with only their product name stenciled or printed on bags carrying their products, small art departments were maintained in several Chase factories to serve the needs of each local territory. Later however, bag users in various industries began to realize the intrinsic value of a colorful, well designed brand name printed on each container.

Anticipating future demands for advertising art on bags, Chase Bag Company drew upon branch talent and hired other artists, designers, engravers, and ink experts to form a centrally located art department in St. Louis to serve its various branches' customers from coast to coast.

The department is headed by Burnam R. Jones, who has served the company for many years as Sales Manager and Branch Manager. In addition to the staff of artists, the chemical problems of ink composition, etc. are handled by Harold Anthony.

Operating on a service basis, the Chase Central Art Department has developed into one of the most modern and efficient functions of its kind in the industry. Located strategically in Central United States to serve Chase Bag Company's coast to coast operations, this department has originated a host of the most widely recognized product brand names for bagged products. More than 10,000 of these Chase designed brands are stored, in the form of engraved originals in the new St. Louis plant's fireproof vault to assure prompt

service when new plates are requested by the branches.

The new St. Louis plant is one of three factories completed by the company in 1947. It is one of the largest factory buildings heated by a floor-panel radiant heating system. Ten miles of pipe under the floor carry heat from the boiler to all parts of the building.

November Superphosphate

Production of superphosphate during November, according to the U. S. Bureau of Census, totaled 862,662 tons (basis, 18 per cent A. P. A.), a drop of three per cent from October but 15 per cent above the November, 1946, figure of 750,940 tons. This decrease corresponds to the shorter working month, showing that the industry is keeping its production at top levels. Both normal and concentrated superphosphate showed smaller production than October but wet-base-goods increased 25 per cent to 5,603 tons. Shipments were smaller than October in all types, with stocks on hand showing an increase except in the concentrated material.

	Normal 18% A. P. A. Tons	Concen- trated 45% A. P. A. Tons	Base Goods 18% A. P. A. Tons
Production			
Nov. 1947.....	782,329	29,892	5,603
Oct. 1947.....	787,942	37,944	4,403
Nov. 1946.....	668,309	31,633	3,548
Shipments and used in Producing Plants			
Nov. 1947.....	715,678	31,485	3,333
Oct. 1947.....	793,632	37,842	3,334
Nov. 1946.....	632,954	23,989	2,303
Stocks on Hand			
Nov. 30, 1947.....	762,060	61,640	17,495
Oct. 31, 1947.....	685,347	63,233	15,225
Nov. 30, 1946.....	584,094	56,167	11,845

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FERTILIZER MATERIALS MARKET

NEW YORK

Demand from Feed Trade Brings Further Increase in Prices of Organics. Very Little Fertilizer Organic Material Available. Advances in Sulphate of Ammonia and Ammonium Nitrate Prices Reported. Nitrate of Soda Demand Increases.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, January 21, 1948.

Organics

Feed buyers continued to bid actively for available supplies of tankage, and blood and it was difficult to find material for quick shipment. Last sales of tankage were made at \$11.50 per unit of ammonia (\$13.98 per unit N), f.o.b. shipping points and blood sold at \$11.00 (\$13.37 per unit N). Fertilizer buyers were not inclined to go along at present prices and remained on the sidelines. Vegetable meals from first hands were not available for prompt shipment and the market continued to be a re-sale affair. Sales of soybean meal were made at \$105.00 per ton f.o.b. Decatur, Ill., and linseed meal sold at \$102.00 per ton, Minneapolis. Cottonseed meal followed the strength in the other markets. Fertilizer buyers were forced to turn to some low grade ammoniates which have not been going to the feed trade. The supply of this material for prompt shipment was negligible.

Fish Meal

Some imported fishmeal is reported to be on its way from abroad to relieve the short supply in this country. Practically all available material is going to the feed trade, with fertilizer buyers remaining out of the market on account of price.

Castor Pomace

Producers are trying hard to fill existing contracts and shipments are reported to be going along at a satisfactory level.

Potash

A shortage of this material still persists in spite of the efforts of the producers to catch up with the demand. Very little has been heard recently regarding the importation of foreign potash. Sulphate of potash is particularly hard to find for prompt shipment.

Superphosphate

Although there is shortage of tank cars for sulphuric acid which is one of the principal ingredients of this material, the production is said to be going along at a satisfactory rate and shipments are being made on contract.

Sulphate of Ammonia

Most producers have now advanced their price to \$40.00 per ton, f.o.b. production point. Some few are still quoting \$35.00 but some of these are expected to follow suit shortly. The present range is from \$35.00 to \$40.00 per ton.

Nitrate of Soda

The demand has recently increased for this material as buyers realize supplies will not be as plentiful as anticipated, although importers feel they will be able to fill their quotas.

Nitrate of Ammonia

This material was advanced in price by one producer, due to higher labor costs. Very little material is going to the domestic trade and the bulk of shipments are still going for export.

Bone Meal

Raw bonemeal is hard to obtain and stocks on hand are very light. Steamed bonemeal continues in good demand in various sections.

Nitrogenous Tankage

One leading producer raised his price to \$5.00 per unit of ammonia (\$6.08 per unit N), f.o.b. production point, which puts him more in line with the actual market. No spot material is obtainable as producers are sold ahead on contract.

PHILADELPHIA

Improvement in European Production. Better Phosphate Rock Production Abroad. Domestic Material Demand Strong and Market Tight.

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, January 19, 1948.

The demand for all raw materials is increasing and supplies of chemical nitrogen are still much short of requirements. However, the production of nitrogen in Europe is said to be increasing rapidly and it is rather expected that in another year or two they will be exporting instead of importing.

Sulphate of Ammonia.—Demand still continues ahead of supply, despite the fact that the general price for domestic use now seems to be \$40.00 per ton, f.o.b. producing points, with \$45.00 for export.

Nitrate of Soda.—No price changes are reported. Imports continue to arrive per schedule and move out on contracts. There are no free offerings of domestic grade.

Ammonium Nitrate.—Production and supply continue short of demand. The price of the Canadian production is reported advanced \$4.50 per ton, making \$79.50, f.o.b. producing plant, in bags.

Castor Pomace.—There are no free offerings by producers, but some resale material is on the market.

Blood, Tankage, Bone.—Offerings of blood are limited in quantity and sellers are not eager. Price has advanced and sales are reported at \$10.50 to \$10.75 per unit of ammonia (\$12.76 to \$13.07 per unit N). Tankage is reported in limited supply, with sales as high as \$11.00 per unit of ammonia (\$13.37 per unit N). Bone is very firm under strong feeding demand, with present production well under contract.

Fish Scrap.—Supply position is exceedingly tight and market practically bare, with active

demand from feeders. Sixty per cent protein meal was being quoted at \$2.90 per unit of protein (\$18.11 per unit N), to \$3.00 per unit (\$18.86 per unit N), which is entirely out of fertilizer range.

Phosphate Rock.—Consuming demand continues ahead of production and buying position remains tight. Future supply situation is expected to improve as production abroad is reported increasing rapidly.

Superphosphate.—Stocks are short of the demand, which is very strong.

Potash.—While shipping conditions have improved, the demand is much in excess of production, and the market position is firm and tight.

CHICAGO

Fertilizer Organics Market Dull In Spite of Scarcity. Feed Market Strong and Prices Rising.

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, January 19, 1948.

While there is still a scarcity of all fertilizer organics, the market is dull and consequently quotations are on the down side. Sales have been made at \$5.50 per unit of ammonia (\$6.68 per unit N), f.o.b. points taking similar freight rates as Chicago. Other productions have been priced as low as \$5.15 (\$6.26 per unit N), f.o.b. points taking more favorable rates than Chicago.

The condition of the market is attributed by some to low prices for Florida citrus fruits. Another factor is the Georgia ruling that the manufacturers may not claim credit for organic nitrogen in their mixtures unless at least 10 per cent of the total nitrogen is organic. Manufacturers, during the scarcity of organics, have been using less than 10 per cent in their mixtures, so decided it would be better not to use any.

The feed market is strong, and the demand for wet rendered tankage exceeds the current



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There's a lot of satisfaction in having an old-fashioned stove in the middle of the room, one you can plant your slippers on when you're leaning back in a favorite rocker. Many a modern farmer would like to go back to the old days . . . when ground was fertile, and there wasn't a single thing to worry about except whether or not it was going to rain, or if the boys would all be at the country store to discuss the latest news.

But time, as it always does, has brought changes . . . the horse has given way to the tractor, the lamps have been replaced by electricity, unproductive land has been replaced by fertile soil . . . and methods of fertilizing and fertilizers have all changed too. Today, as every modern farmer knows, commercial fertilizers are made for practically every type of soil, and modern shipping sacks have given the user an efficient method of handling fertilizers. Yes, farmers can still live the

way they choose, but facts prove today that all farmers must use commercial fertilizers if they are to keep pace with production.

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supply at prices ruling from \$11.00 to \$11.50 per unit of ammonia (\$13.37 to \$13.98 per unit N), f.o.b. shipping point. Dried blood is now firm and around \$11.00 (\$13.37 per unit N), f.o.b. production point.

CHARLESTON

Improvement in Contract Shipments on Some Materials Reported. Demand Still Exceeds Possible Supply. Prices Increasing.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, January 19, 1948.

Shipping situation on potash has improved considerably and demand for all fertilizer materials continues strong with supply inadequate to meet the call. General movement of mixed fertilizers to the farmers is becoming increasingly heavy.

Organics.—The call for organics by the fertilizer trade is exceedingly slack, but demand for blood and tankage, suitable for feed purposes, quite strong. Very few quotations or offerings of South American organics are available. Some domestic nitrogenous has been offered at \$6.38 per unit of ammonia (\$7.74 per unit N), delivered southeastern points in bulk, for prompt shipment.

Castor Pomace.—Movement continues against contract commitments and no new offerings are reported.

Potash.—The bottleneck from the box car standpoint has eased considerably and stocks at the mines have been reduced to a point where shipment is almost at normal volume. However, demand far exceeds supply with producers heavily booked.

Nitrate of Soda.—Demand is steady and the market tight as supply is unable to take care of the call. Imported nitrate of soda is arriving regularly. No change in price has been re-

cently announced since the \$48.00 per ton price in bags at the ports.

Sulphate of Ammonia.—Some producers have recently announced that the price will be \$45.00 per ton in bulk f.o.b. the ovens, but prices continue to range from \$35.00 to \$40.00 in bulk for some producers. Demand is exceedingly strong and the supply insufficient to meet the call.

Dried Ground blood.—The market is active and strong with prices ranging from \$11.00 to \$11.50 per unit of ammonia (\$13.37 to \$13.98 per unit N), f.o.b. Chicago.

Tankage.—The market is also strong on this article and demand primarily from the feed trade with prices at \$11.00 to \$11.50 per unit of ammonia (\$13.37 to \$13.98 per unit N), at Chicago.

Superphosphate.—The situation throughout the country continues tight and apparently tightens further as the season progresses. Any surplus in the Southeast has been liquidated and the demand, particularly from the West and Midwest, is tremendous.

Phosphate Rock.—Producers are heavily sold up and the demand continues strong. Movement is primarily against existing contracts with acidulators.

Corn Winner Uses Plenty of High Grade Fertilizer

Earl A. Noble, of Seneca, Ontario County, winner of the New York section of the DeKalb National Corn Growing Contest, is a believer in plenty of high grade fertilizer. Mr. Noble's five-acre entry yielded 118.55 bushels per acre (shelled corn basis) which is about three times the average New York

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state yield. He used 1,000 lbs. per acre of a 5-10-10 fertilizer and planted in 36-inch rows. An average of 70.9 bu. per acre were grown by the 78 New York contestants, as compared with an 81.03 bu. average in 1946. The late spring made it necessary for Mr. Noble and more than half of his rivals to delay planting until June.

T. M. Martin, president of Lion Oil Company, has announced the appointment of Dr. Frank J. Soday as Director of Research. In that capacity Dr. Soday will conduct an expanded and intensified research program in all departments of the petro-chemical field.

In responsible research positions Dr. Soday has for the past fifteen years specialized in the

field of hydrocarbon utilization and his duties with Lion Oil Company will represent a continuation of that work.

During World War II Dr. Soday was Technical Director for the Copolymer Corporation of Baton Rouge, Louisiana, and most recently he has been Director of Research for Devoe and Raynolds Company of Louisville, Kentucky. A native of Coaltown, Pennsylvania, Dr. Soday holds Master of Science and Ph.D. degrees from Ohio State University.

The appointment of Dr. Soday marks an important step in the planned program of research which in the next few years will be greatly enlarged both in size and scope, Mr. Martin said.

Lockwood Predicts 18-Million Ton Year in 1948

"The fertilizer industry is prepared to assist America's farmers in meeting the production goals urged by the President in his January 14th Annual Economic Report to Congress," Maurice H. Lockwood, President of The National Fertilizer Association has stated. In his Report, President Truman asked that farm production during the next ten years be increased ten per cent.

"We believe that with the proper use of fertilizer, farmers can easily do this job," said NFA's leader. "Fertilizer today accounts for about 20 per cent of our country's food production. It is highly probable that this



Dr. Frank J. Soday

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percentage attributable to fertilizer will increase as fertilizer production continues to break records year after year.

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Highley Now Manager of Bemis N. Y. Sales Division

Mr. Robert Highley has been appointed Manager of the New York General Sales Division, Bemis Bros. Bag Co., effective January 1.

Mr. Highley joined Bemis in 1916 as a member of the Boston Jute Department. He remained there, except for two years military service during World War I, until 1924 when he transferred to the Bemis New York Office with burlap purchasing as his primary duty. He became a member of the New York General Sales Division at the beginning of 1944, and for a time prior to his formal appointment had been acting manager there.

Hugh Comer, president and treasurer of Avondale Mills, Sylacauga, Ala., has been elected to the board of directors of Allis-Chalmers Mfg. Co., Milwaukee. Mr. Comer, who was a speaker at a recent N. F. A. Convention has many friends in the fertilizer industry.

Soil Conservation Service Reports Another Record Year

A NEW record of completing conservation treatment on more than 20 million acres despite lack of personnel for giving adequate assistance to all farmer-operated soil conservation districts requesting it during the 1947 fiscal year has been reported by Chief H. H. Bennett of the Soil Conservation Service.

In his annual report to Secretary of Agriculture Clinton P. Anderson, the soil conservation chief pointed out that both 1945 and 1946 were years of record accomplishment, but that in 1947 service technicians assisted farmers in putting "more than twice as much conservation work on the land as during 1945 and increased the 1946 record by more than 25 per cent." That included some 127,000 farm plans that covered about 36 million acres, in addition to soil conservation practices which were spread to thousands of neighboring farms and ranches.

"The increasing cooperative efforts of the farmers working in districts," Dr. Bennett said, "together with the greater experience and efficiency of service technicians, made it possible to increase the amount of conservation put on the land without sacrificing quality."

He explained that the conservation operations recommended by the Soil Conservation Service are based on 18 years of intensive scientific research and 14 years of farmer experience with measures tried and proved on more than half a million of the Nation's farms. When the operational phase of the national program was launched, he said, "it was not foreseen that so much progress could be made in so short a time."

The report showed that the 126,970 conservation farm plans prepared in the 1946-47 year by farmers and service technicians brought to 516,115 the plans in the soil con-

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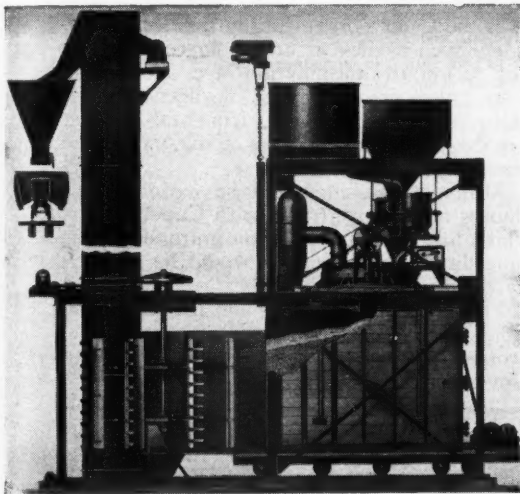
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servation districts alone, covering 142,074,155 acres, of which 70,272,575 have been treated. Additional millions of acres planned and treated in earlier programs administered by the Service also were reported. Among individual conservation treatments listed as applied in districts to June 30 were more than 13 million acres of contour cultivation; more than 442,000 miles of terracing; more than five million acres of cover crops; more than 15 million acres of stubble-mulch farming; 35½ million acres of proper range stocking, plus about 5,800,000 acres of range and pasture seeding; 78,000 farm and ranch ponds built; more than 1,800,000 acres of farm drainage completed; and more than 4,800,000 acres of woodland improvement.

Dr. Bennett emphasized the economy and profitableness of this soil conservation work: A service cost of only \$1.63 an acre for complete soil conservation surveys, planning and land treatment in 1947, with the farmers themselves bearing the principal expense over a series of years. He cited reports from the records of typical farmers and ranchers showing that soil conservation had increased their per acre income \$4.90 on the average, and added: "Nearly all farmers who have adopted a complete conservation-farming program claim that it has increased their yields from around 30 per cent to more than 100 per cent."

The report called attention to between 425 and 455 million acres of cropland being damaged in varying degrees by erosion and needing treatment in the next 10 to 30 years, and to additional millions of acres of range and pasture land conservation treatment needed.

Dr. Bennett also cautioned "that the high production of recent years was made at the expense of the land in many areas where efficient soil conservation work had not been done. Land damage of this kind is still continuing."

Creation of new districts at the rate of about

250 a year, plus steadily increasing demand for soil conservation assistance by both old and new districts, Dr. Bennett said, prevented the Service's limited technical personnel from keeping up with the demand in some districts during the year, although less than six per cent of its employees are occupied in administrative jobs.

Cuban Employment Decree Affects Sales Agencies

A decree has been issued by the president of Cuba which seriously affects foreign companies having branches or sales agencies in that country. According to the decree, issued December 18th, a foreign firm employing Cuban Nationals is forbidden to terminate their employment, except for "just cause" proven in proceedings before the Ministry of Labor.

The decree not only covers employees in branch plants and offices established by foreign firms and operated under their management, but also applies to independent sales agents who represent outside companies in Cuba. Even though an agent represents a number of companies, who have no control over the agent's organization, the decree considers such agency as an employee and does not permit the termination of a sales agreement unless proofs of fraud, negligence, abuse of confidence or similar detrimental conduct can be established by the above-mentioned proceedings.

Although some companies have cancellation clauses in their contracts with Cuban agents which had been agreed upon mutually, these cancellation arrangements would be nullified by the decree.

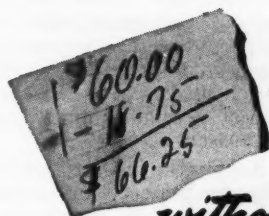
The U. S. State Department instructed the American Ambassador in Havana to file a protest against this action by the Cuban Government.

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FREE BROCHURE

expresses the views of two business leaders. Be sure to get your copy from the State Director . . . today!



Spencer Chemical Company Promotions

Spencer Chemical Company, of Kansas City, Missouri, well known producers of ammonium nitrate, anhydrous ammonia and nitrogen solutions, has recently made several promotions in their sales and technical service departments.

Joe E. Culpepper, who has served as Director of Sales, Fertilizer Division, has been advanced to the office of Assistant General Sales Manager. Before joining the Spencer staff, Mr. Culpepper was sales manager of Synthetic Nitrogen Products Co., of New York.

H. R. Dinges has been appointed Sales Manager, Chemical and Fertilizer Department. He was formerly Director of Sales for the Chemical Department. Before his employment with the Spencer organization in February, 1947, Mr. Dinges was district sales manager for the Mathieson Alkali Works.

W. Ralph Smith has been promoted to the office of Fertilizer Sales Director. He formerly was with American Cyanamid Company as district sales supervisor in the Southwest.

J. Richard Adams has been advanced to the position of Director Technical Services. Mr. Adams, who was formerly an official of the U. S. Department of Agriculture, joined the Spencer staff as Chief of Technical Service.

All of the above officers are located at the main offices of the Company, 610 Dwight Building, Kansas City, Mo.

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ROCK AND OTHER MATERIALS

THE FERTILIZER INSPECTOR AND HIS EQUIPMENT

(Continued from page 12)

warehouses while 11,360 bags, averaging 5.2 lbs per bag were found on farms.

4. The expressing of cases of samples from different offices in the district to the laboratory should be encouraged as it tends to spread the news that such services are available. Printed labels addressed to the Department Laboratory should be furnished the inspector to attach to the cases of samples. It is suggested that space be left on the label for the inspector's return address and the sample numbers contained therein. The latter information makes possible the easy identification of a certain sample if called for, for a special reason.

5. Supply the inspector with lined, padded letterhead stationery and stamped envelopes for necessary correspondence. He should also be provided with forms suitable for seizure of goods not complying with the fertilizer laws. Scripto pencils with indelible lead will make for neater reports.

6. Daily Reports. The daily report, in addition to giving a complete report of the days activities, gives an itinerary for the next three days. The report also includes the name and address of the farmer or dealer, sample number, number of bags in the lot and name of manufacturer. You will note on the report passed out, that space is provided for "other contacts" made and remarks. As previously mentioned, by making a notation on the report as to the farmer's desires and needs, a number of pure-bred bulls, boars and seed have been placed.

Some time ago, August to be exact, I sent out a questionnaire requesting certain information pertaining to fertilizer control. The most pertinent portion has been included in the summary. You will note there is a tremendous variation in the equipment used. As an association, we may like to think along the lines of standardizing our equipment, over a period of years. After studying this summary I am sure any control official would be delighted to lend another any of his equipment for trying out.

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How much sulphate of ammonia, containing 20 per cent. of nitrogen, would be needed to give $4\frac{1}{2}$ per cent. nitrogen in the finished product?

Seven hundred and fifty pounds of tankage, containing 8 per cent. phosphoric acid are being used in a mixture. What per cent. of phosphoric acid will this supply in the finished goods?

Should the Adams' Formula Rule become soiled from handling, it may be readily cleaned with a damp cloth.

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on twelve or
more.

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THE TRANSPORTATION AND SAFE HANDLING OF AMMONIUM NITRATE

(Continued from page 10)

(10) Clean-up operations. After the extinguishment of the fire the damaged fertilizer should be removed and disposed of. Unsalvageable fertilizer may be disposed of by burying in the ground or dumping in water inasmuch as it is soluble in water. When all fertilizer has been removed the warehouses should be hosed and scrubbed with water, and all residue of fertilizer washed away. It is advisable that metals in contact with the residue of ammonium nitrate fertilizer be thoroughly cleaned with water to eliminate corrosion. Wooden floors impregnated with ammonium nitrate fertilizer will be very free burning if a source of ignition should contact them. For this reason flushing and scrubbing of such areas should be very thorough to insure that the dissolving of all ammonium nitrate fertilizer has been accomplished. Wet empty bags which formerly contained ammonium nitrate fertilizer should be removed to a safe location, permitted to dry out, and then burned; a small number at a time.

Storage and Handling on the Farm

The Committee believes the following suggestions should be given widest practicable circulation among farmers using ammonium nitrate fertilizer:

(a) The fertilizer should be stored away from organic materials or other contaminating or combustible substances. Insofar as practicable the fertilizer should be stored in a separate building, away from the main barn or other principal structure.

(b) The contents of broken bags or of opened bags should be used immediately.

(c) Bags which have contained ammonium nitrate fertilizer should be disposed of immediately after being emptied. A good way to do this is to burn them, a few at a time in the open.

(d) Farmers may obtain detailed information regarding ammonium nitrate fertilizer by contacting their local County Agricultural Agent or by writing to the United States Department of Agriculture, Washington 25, D. C., for U. S. D. A. Circular 719, which contains such information in printed form.

Two of the Army representatives on the Committee did not approve the recommendation that the temperature be kept at 140°F or under when ammonium nitrate is bagged.

LABELING FOR MINOR PLANT FOODS

(Continued from page 8)

very unfortunate because the growers get the idea that certain things are important, and other things are less important. As a matter of fact, you can omit either potassium or phosphate for longer periods from your fertilizer without bad results than you can omit magnesium. I think the sooner we get them on the same basis, the better off we are going to be."

I think this idea of Dr. Camp's to get all plant foods on the same basis has merit. I also foresee a great many difficulties and headaches for whoever tries to put it over. It might be wise for this Association to appoint a committee to begin the study of this problem and report back next year.

Another problem in connection with the labeling of minor plant foods, and one which is going to require study is the question of availability. A good deal of work has already been done and is still being done by the A. O. A. C. on the subject of availability of secondary plant foods, but there is still little agreement as to what might actually represent availability in such secondary plant foods as magnesia, copper, manganese, zinc, etc. Water-solubility, which is somewhat a misnomer itself, is still probably the most reliable measure of availability on most of these materials, but it leaves a lot to be desired in accuracy, especially in mixed goods, and probably does not do justice to some of the less soluble compounds of magnesia.

If this Association does nothing more than to be instrumental in bringing about an orderly classification of plant food materials and a fair degree of uniformity in labeling and guaranteeing the elements of plant food they contain, it will more than have justified its existence.



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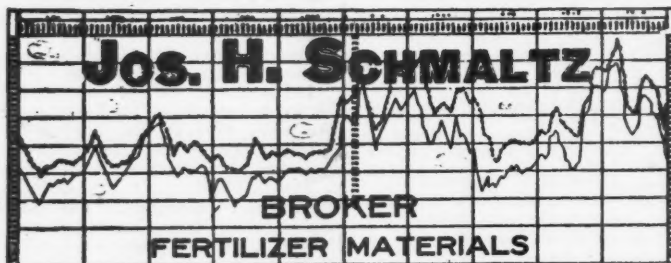
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